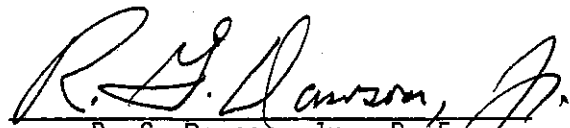


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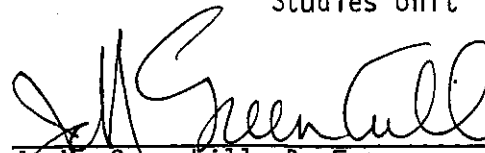
NC 16 (Providence Road), Charlotte
From Old Providence Road to the Outer Loop
Mecklenburg County
FS 890003

Prepared by
Planning and Research Branch
Division of Highways
N. C. Department of Transportation



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5.9.89
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NC 16 (Providence Road), Charlotte
From Old Providence Road to the Proposed Outer Loop
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I. DESCRIPTION

This report covers a preliminary study of the proposed widening of the subject road to a multi-lane facility for a distance of approximately 5.3 miles. Location of the studied section of road is shown on Figure 1. This study was made in response to the request of the City of Charlotte for consideration for inclusion in the Transportation Improvement Program.

II. PURPOSE OF PROJECT

Existing Route Characteristics

The studied segment of NC 16 is designated as a major thoroughfare in the Charlotte Thoroughfare Plan. It is an important radial route serving rapidly growing South Charlotte and providing access to the central business district.

NC 16 is a two-lane suburban roadway with variable width shoulders and a posted speed limit of 45 to 55 MPH. South of Old Providence Road, it ~~tapers~~ from a four-lane divided cross section (2 @ 24-foot pavements divided by 14-foot grassed median with outside curbing, measured 62 feet face to face) to a 24-foot travelway. There are short sections where the pavement is widened to three and four lanes with curbs and sidewalks. However, the through movements are constrained to two lanes throughout the project length. At the crossing of the proposed Outer Loop, NC 16 is planned to be widened to a 4-lane divided section with a raised concrete median.

Five signalized intersections with various turning lanes are located along this study section. At NC 51, substantial intersection improvements were made recently. They included dual left turn lanes and separate right turn lanes on all approaches, three through lanes in each direction on NC 51 and two through lanes in each direction on NC 16.

Only one concrete bridge is in place on the studied section of road. The 30-year old structure crosses McAlpine Creek with a length of 169 feet and width of 28 feet. Its sufficiency rating is 66 (compared to 100 for new bridge).

Adjacent land use on NC 16 is primarily low to medium density residential. Most of the properties have access to NC 16 via residential streets. Few residences and several churches have direct access. Development along the NC 16 corridor is increasing at a rapid rate. Approximately 200 acres of commercial office, multi-family, and shopping center construction is underway at four corners of the NC 51-NC 16 intersection. In addition, a major high school and an elementary school located off NC 16 are scheduled to open this fall.

Traffic Volumes, Capacity, and Accident History

Average daily traffic volumes during 1988 ranged from approximately 12,000 vehicles per day near the proposed Outer Loop crossing to 20,000 vpd at Old Providence Road. North of Old Providence Road, the traffic volume increases to approximately 26,000 vpd. Approximately 5 percent of this traffic is composed of heavy trucks and buses. Assuming the proposed Outer Loop in place, estimated traffic volumes in year 2010 are 30,000 to 40,000 vpd, respectively. Beyond the Outer Loop, the traffic volume on NC 16 would drop to about 18,000 vpd.

Generally, capacity of the existing two-lane road, operating under signalized conditions, is approximately 8000 vpd at desirable level of service C. Thus, capacity is already exceeded by present traffic volumes at all points along NC 16. In fact, the traffic load has reduced the level of service to E and below, which is considered to be intolerable.

Accident records for nearly a four-year period of 1985 to 1988 revealed 325 accidents along the studied length. The resulting accident rate is 2.7 accidents/million vehicle miles. This is slightly better than the statewide average of 2.9 acc/mvm during 1988 for two-lane North Carolina urban routes. The vast majority of these accidents occur at signalized intersections. Approximately half of the accidents was attributed to rear-end collisions.

III. RECOMMENDATIONS AND COSTS

NC 16 is a two-lane major thoroughfare operating far below acceptable levels of service during peak hours. To correct this deficiency, additional lanes are warranted immediately.

Estimated 2010 traffic volumes show a need for six lanes to adequately move traffic from Old Providence Road to the proposed Outer Loop. However, until NC 16 is widened to six lanes north of Old Providence Road, only four lanes can be fully utilized south of Old Providence Road. Therefore, a four-lane divided cross section is recommended for initial construction, but with provisions for a future six-lane divided section.

The recommended initial cross section is two 24-foot pavements divided by a 16-foot raised grassed median with outside shoulders. This cross section is compatible with the adjoining four-lane roadway to the north and would allow future widening on the outside to provide a six-lane divided section with curb and gutter. The 16-foot median would permit installation of left turn lanes at intersections.

Because it is aging and its condition will deteriorate over time, the existing bridge across McAlpine Creek should be replaced with a new and wider structure at the same site. The new structure should have a six-lane width but be striped initially for four-lane operation until the roadway is improved to six lanes.

For cost estimate purposes, symmetrical widening is assumed for the entire project length. On some sections where development is light or land is vacant, widening could probably be more economically accomplished on one side. However, the area is developing rapidly and likely to be heavily developed by the time this project, if funded in the near future, reaches final design stage. Additional right-of-way will be required for the recommended initial cross section. A total right of way width of 110 feet (including existing right of way) with construction easements where necessary was used for determining right of way costs. This right of way width should be sufficient to accommodate future widening to a six lane divided section with outside curb and gutter.

Estimated costs of the recommended improvements are as follows and divided into two sections for purposes of staging if needed:

Old Providence Road to NC 51, 2.5 miles (first stage)

Roadway	\$ 3,490,000
Bridge Replacement	1,210,000
Right-of-Way	4,700,000
Subtotal	\$ 9,400,000

NC 51 to Outer Loop, 2.8 miles (second stage)

Roadway	\$ 4,100,000
Right-of-Way	1,900,000
Subtotal	\$ 6,000,000


TOTAL	\$15,400,000
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IV. OTHER MATTERS

Consideration was given to a cross section alternative of a five-lane shoulder section along the entire project length. This cross section would be an undivided roadway but permit widening to seven lanes with curb and gutter within the same right of way width mention above. However, total cost savings resulting from the alternative scheme would not exceed \$500,000 for the entire project. The savings are not considered sufficient to outweigh the aesthetic and continuity advantages of a grassed median section. Continuation of the existing grass median section north of Old Providence Road is strongly desired by the City of Charlotte.

The recommended improvements should have no significant environment impacts with one exception. The exception is the probable adverse effect on two historic sites located near the proposed Outer Loop - Providence Presbyterian Church and Cemetery, both on opposite sides of NC 16. The sites (organized in 1767) are listed on the National Registry for Historic Sites. Other impacts would include the taking of land for right of way, disruption to traffic flow during construction, and increased noise levels for roadside development. No displacement of residences or businesses is anticipated with the recommended scheme.



	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PLANNING AND RESEARCH BRANCH
	NC 16 (PROVIDENCE RD.), CHARLOTTE FROM OLD PROVIDENCE RD. TO PROPOSED OUTER LOOP, MECKLENBURG COUNTY
	5 / 89 FIG. 1